

microsomes. They always form part of the cytomitoma, and are therefore plasmatic, and not paraplastic. They are probably concerned with amœboid movement, and they and the rest of the mitoma are more visible the more active the cell. No definite conclusions as to their chemistry can yet be arrived at, but all the altered microsomes probably consist of nucleo-albumins, the basophiles being richer in phosphorus than the eosinophiles.

In diseased conditions it is probably impossible to say what organ is affected from the kind of leucocytes present in excess in the blood.

VI. "On the Development of *Lichenopora verrucaria*, Fabr." By SIDNEY F. HARMER, M.A., Fellow of King's College, Cambridge, Superintendent of the University Museum of Zoology. Communicated by A. SEDGWICK, F.R.S. Received October 15, 1895.

(Abstract.)

The principal results of my examination of the life-history of *Lichenopora* have already been communicated to the Royal Society.\* I then showed that embryonic fission occurs as a normal process in the development of that genus, as of *Crisia*. The general growth of the colony and of the embryo was described, and attention was called to the remarkable fact that the embryonic processes which culminate in the production of the entire first brood of larvæ commence in the earliest stage of the formation of the colony itself.

The present paper contains a fuller account of the processes indicated above, with the addition of some new details. Statistics are given to show that the zoecium which produces the primary embryo, from which the larvæ are developed by a process of embryonic fission, is, in the great majority of cases, one of the first two blastozoites of the colony. The position assumed by these two zoecia depends on the direction in which the primary zoecium has become curved; and "left-handed" and "right-handed" colonies are accordingly distinguished. The relation of the young ovicell to the fertile zoecium has been observed for the first time. The formation of the ovicell commences with the occlusion of the orifice of the fertile zoecium; and this takes place in such a way that the body-cavity of the zoecium remains continuous, near the orifice, with the cavity of the ovicell. The polypide has previously degenerated, and the embryo, contained in an investment, the "embryophore," has passed up to the neighbourhood of the orifice, still attached to the

\* 'Roy. Soc. Proc.,' vol. 57, p. 188.

fertile brown body. The latter can be easily detected in stained colonies at this stage, and its remains may be seen even in colonies which have been mounted dry. Its position differs from that of the ordinary brown bodies, which are situated at a deeper level in the colony.

The communication between the fertile zoecium and the young ovicell permits of the passage of the embryonic structures into the cavity of the latter. The fertile brown body, which remains a conspicuous object for a long period, is usually found in the ovicell, not far from the zoecium in which it was produced; and it forms a kind of centre from which the lobes of the branching embryophore pass out. The primary embryo has meanwhile divided repeatedly, so that the ovicell contains a large number of secondary embryos, some of which are already developing into larvæ, and others are still undergoing division.

A definite relation thus exists between the size of the colony and the extent to which the ovicell or the embryo has developed, although variation in these respects occurs within rather wide limits. This fact is illustrated by series of measurements.

The healthy development of the embryos is shown to depend on the functional activity of the polypides, which no doubt nourish the developing larvæ. There are reasons for believing that complete degeneration of the polypides does not ordinarily take place at a time when their activity is required for the nourishment of the ovicell.

Some details are given with regard to the changes which take place in the older colonies, and particularly with regard to the secondary thickening of the calcareous matter and to the development of new broods of embryos.

It would hardly be possible to find two Cyclostomes which are more different from one another than are *Orisia* and *Lichenopora*. The fact of the occurrence of embryonic fission in both genera, accompanied as it is by complete dissimilarity of details, may be taken as affording strong grounds for believing that the existence of embryonic fission is a fundamental phenomenon which occurs throughout the Cyclostomata.

*Presents, November 28, 1895.*

#### Transactions.

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